

# Claims

- [c1] A device for identifying or approximating the celestial objects a user's gaze is directed to or near and for indicating that information to the user comprising:
- A means of detecting or approximating a user's gaze.
  - A processing device, such as a microprocessor that receives and manipulates information from sensors, and input devices, performs calculations required to determine a user's gaze relative to celestial objects, retrieves information from memory about celestial objects, and outputs information to the user.
  - An input device such as a handheld keypad or a microphone for voice input.
  - Output devices such as graphical displays and speakers.
  - A database of celestial objects, their names, celestial coordinates, and any other information of potential use or interest such as historical, scientific, or fictional information about the objects.
  - A database of geographic locations and associated latitude and longitude.
  - A means of time keeping.
  - A power supply.
  - Interconnections between physically distinct components

for information flows and in some embodiments power flows.

Software for directing the processor to interact with input/output, databases, sensors to fulfill the devices design goal.

- [c2] The device of claim 1 where the direction of the user's gaze is approximated by the position of their head and body relative to the earth's magnetic and gravitational fields as determined by sensors on the head and on or attached to the body.
- [c3] The device of claim 1 where a user's gaze is approximated by the position of their head relative to the earth's magnetic and gravitational fields as determined by sensors.
- [c4] The device of claim 1 where a user's gaze is approximated by the angle of inclination of the user's head with respect to the earth's gravitational field and of the user's body with respect to the earth's magnetic field as determined by sensors.
- [c5] The device of claim 4 where the angle of inclination of the user's head is determined by accelerometers, either 1,2, or 3 axis and the direction of the user's body is determined by magnetometers of 2 or 3 axis

design.

- [c6] The device of claim 1 where a user's gaze is approximated by the position of their head relative to a reference direction maintained by a gyroscope or gyroscopes.
- [c7] The device of claim 1 where a user's gaze is approximated by the position of their head relative to the earth's surface as determined by a gyroscope and relative to the earth's magnetic field as determined by a magnetometer.
- [c8] The device of claim 1 where the user's gaze is determined by sensing the direction a user's eye is pointed and how the user's head is oriented relative to the earth's gravitational and magnetic fields.
- [c9] The device of claim 1 where the user's gaze is determined by sensing the direction a user's eye is pointed and how the user's head is oriented relative to a reference direction maintained by a gyroscope or gyroscopes.
- [c10] The device of claims 1–9 where sensors are embedded in clothing, such as hats.
- [c11] The device of claims 1–9 where sensors or components are worn or attached to clothing or to the body.
- [c12] The device of claim 1 where physically distinct compo-

nents such as sensors, input/output, and computational devices are interconnected by any of or any combination of: wires, electromagnetic signals, or acoustic signals.

- [c13] The device of claim 1 where the location of the device is determined by global positioning system signals.
- [c14] The device of claim 1 where time is determined by receiving time signals from a radio station.
- [c15] The device of claim 1 where a means of time keeping is via crystal oscillators attached to electronics as in microprocessors or real time clocks.
- [c16] The device of claim 1 where location information, time at power on, and celestial objects being sought are all input via a handheld keypad.
- [c17] The device of claim 1 where database of geographic locations consists of objects likely to be familiar to the user such as states, provinces, countries, big cities, lakes, addresses, or postal codes.
- [c18] The device of claim 1 where database of celestial objects may be data in any useful format or combination of formats such as voice, text, or pictures.
- [c19] The device of claim 1 where database of celestial objects may contain any information of use to approximating the

object location (e.g. angular size) or of potential interest to the user including scientific, historical, cultural, or even fictional information.

[c20] The device of claim 1 where input whether of time, location, or celestial object being sought is entered by voice commands.

[c21] The device of claim 1 where output to the user is via any of or any combination of sound, vibration, images, or text.

[c22] The device of claim 1 that includes calibration steps, such as having the user hold their gaze horizontal and stand vertically so as to associate sensor readings with a standard position. These calibration steps could include obtaining sensor readings while facing to true north, looking to a known celestial object, doing a complete turn around a point, holding still, looking as high up in the sky as possible, or any other physical motion of positioning the head, body, or eyes so that sensor readings may be associated with these movements and positions.

[c23] The device of claim 1 where the processor is a personal computer communicating with the other components via electromagnetic signals, such as by a wireless networking protocol.

[c24] The device of claim 1 where the power supply may be from mechanical energy supplied by the user in place of batteries.

[c25] The device of claim 1 where the database of locations, objects, and also the software to control the device is downloaded into a separate storage device such as those used currently in digital cameras and mp3 players.